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| Author(s) | Cheung, BMY; Cheung, AHK; Lau, CP; Kumana, CR |
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G-CH-2

FAMILY HISTORY OF HYPERTENSION IS RELATED TO ANGIOTENSIN-CONVERTING ENZYME GENOTYPE

Cheung BMY, Cheung AHK, Leung RYH, Lau CP. Department of Medicine, University of Hong Kong, Hong Kong

Objective: Insertion/deletion (I/D) polymorphism of the angiotensin converting enzyme (ACE) gene is associated with coronary heart disease, but the association with hypertension is weak. We examined the relationship between ACE genotype and family history of hypertension in hypertensive patients.

Methods: 48 hypertensive patients (25 men, 23 women; 51 ± 12 yrs) were questioned in detail about their family history of hypertension. Hypertension was assumed if the relative had been diagnosed and treated for hypertension. Unknowns were invited to have their blood pressure checked. DNA was extracted from 5 ml venous blood obtained with consent. Insertion (I) and deletion (D) alleles were identified after amplification by PCR and electrophoresis.

Results: The number of normotensive (NT) and hypertensive (HT) siblings (mean \pm SD), and the proportion of hypertensive siblings in each family are as follows:

| | N | no. of NT sibs | no. of HT sibs | % HT sibs |
|----|----|----------------|----------------|-------------|
| DD | 9 | 0.4 ± 0.8 | 1.6 ± 1.6 | 90 ± 23 |
| ID | 18 | 2.4 ± 2.7 | 0.9 ± 1.4 | 60 ± 35 |
| II | 21 | 2.7 ± 2.3 | 0.6 ± 0.8 | 48 ± 32 |
| | 48 | | | $p = 0.005$ |

Conclusions: DD patients are more likely to have hypertensive siblings and less likely to have normotensive siblings. The high prevalence of hypertension in the close relatives of DD patients needs to be confirmed by further studies.

G-CH-3

IS SYSTOLIC BLOOD PRESSURE RELATED TO POTASSIUM EXCRETION?

Cheung BMY, Cheung AHK, Lau CP, Kumana CR. Department of Medicine, The University of Hong Kong, Hong Kong

Introduction: We had previously found in untreated hypertensive patients that 24 hour urinary sodium excretion correlated with diastolic pressure ($r = 0.52$, $p = 0.0003$, $n = 50$) and ambulatory diastolic pressure ($r = 0.53$, $p = 0.01$, $n = 22$), but not systolic pressure ($r = -0.04$). Systolic pressure increased with age (0.6 ± 0.2 mmHg/year, $p = 0.001$) and surprisingly correlated with potassium excretion. We therefore sought to confirm this prospectively.

Methods: 46 consecutive newly-diagnosed untreated hypertensive patients (30 men, 16 women; age 43 ± 11 yrs) were studied. Blood pressure was measured on 3 occasions. Urine was collected for 24 hours for the measurement of electrolytes.

Results: 24 hour urinary potassium excretion correlated with systolic blood pressure ($r = -0.53$, $p < 0.001$) (fig.). The correlation remains highly significant even after adjusting for age, gender, body mass index, ethanol intake and season ($r = -0.50$, $p < 0.05$). In a multiple regression analysis with systolic pressure as the dependent variable, the regression coefficient was -7.6 ± 1.7 mmHg/10 mmolK. Although systolic pressure increases with age, this was found only in subjects with below median potassium excretion (< 45 mmol/day) ($r = 0.56$, $p < 0.01$). In patients whose potassium excretion were above median, there was no relationship between systolic pressure and age.

Conclusions: In our hypertensive patients, whereas diastolic blood pressure is strongly related to urinary sodium excretion, systolic blood pressure is strongly related to potassium excretion, accounting for 28 % of the variance. Our findings raise the possibility that a diet rich in potassium, such as through eating more fruits and vegetables, may prevent the seemingly inevitable rise in systolic pressure with age.